

will be automatically aligned with the bore of the luer taper, since the end of the luer taper cannula can provide a seal against the upper surface of the septum piston adjacent the perforation to minimize leakage of fluid into the proximal bore portion during operation. It is clear that many modifications may be made to the disclosed embodiment. For example, it can be seen that it is possible for a portion of the distal septum piston to have a fixed relationship to the distal bore portion and for a proximal portion of septum piston to simply compress, rather to be actually displaced. In other words, the septum piston could include a portion which extended into the distal bore portion and which had a fixed relationship to the distal bore portion. In this embodiment, a portion of the septum piston within the proximal bore portion would therefore be compressed into the distal bore portion, despite the fixed position of the distal septum piston within the distal bore portion. In either case, the device functions in a similar manner to achieve longitudinal displacement of at least a portion of the mass of the septum piston along the bore to achieve opening of a centrally-oriented flow channel by lateral compression or otherwise by distorting the septum piston. Although the presently preferred embodiments of this invention have been described, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention. Therefore, the claims are intended to include all such changes and modifications which may be made therein without departing from the invention. Therefore, the claims are intended to include all such changes and modifications that fall within the true spirit and scope of the invention.

I claim:

[ 1. A medical valve for selectively providing fluid communication between a primary fluid system and a secondary fluid system, the valve being selectively activated by a male luer having a distal end and an opening therethrough, the valve comprising:

- a. a tubular housing defining a longitudinal axis and having a proximal end and a distal end and a bore extending from said proximal end to said distal end, the bore defining a longitudinal axis and having a proximal portion defined by cylindrical walls for receiving a male luer and a distal portion, the distal portion including at least one region having a narrower transverse width than said proximal portion,
- b. an elastomeric septum piston defining a longitudinal axis and disposed within said bore, said septum piston having a perforation extending along the longitudinal axis of said septum piston, said perforation being closed when said septum piston is free from external compressive force, at least a portion of said septum piston being displaceable along the longitudinal axis of said bore from a first proximal position wherein said perforation is closed to a second distal position wherein said perforation is open, said septum piston being displaced by a distal end of a male luer when a male luer is inserted into said proximal portion, said septum piston in said second distal position being compressed by said region to open said perforation through said septum piston, and thereby to provide fluid communication from said opening, through said septum piston and into a primary fluid system.]

[2. The valve of claim 1 wherein said perforation is a slit.]

[3. The medical valve of claim 2 wherein said slit defines a long, transverse axis and wherein said region is defined by at least one projecting member, said member projecting in alignment toward said long transverse axis of said slit so that

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when at least said portion of said septum piston is longitudinally displaced along said bore and is compressed by said projecting member, said slit being shortened along said transverse axis by said compression so that said slit opens to provide a flow channel through said perforation to provide fluid communication from said open distal luer end through said septum piston. ]

[ 4. A medical valve for receiving a male luer having an open distal end and for selectively providing fluid communication, said valve comprising:

- a. a male luer having a distal end and an opening therethrough;
- b. a housing having a proximal end and a distal end and a bore, the bore defining a longitudinal axis extending through said housing from said proximal end to said distal end;
- c. said housing including a proximal portion for receiving said male luer end and a distal portion;
- d. an elastomeric septum piston disposed within said bore, the septum piston being moveable along the longitudinal axis of said housing from a proximal position adjacent said proximal portion to a distal position adjacent said distal portion, the septum piston having a sealed perforation extending through said septum piston, said distal region compressing said septum piston when said septum piston is displaced by the distal end of said male luer from said proximal position into said distal position, said compression of said septum piston inducing an opening through said septum piston. ]

[ 5. The medical valve of claim 4 wherein said septum piston is sized to seal said bore. ]

[ 6. The medical valve of claim 4 wherein said septum piston is generally cylindrical. ]

[ 7. The medical valve of claim 4 wherein said compressing portion induces a compressing member, said compressing member projecting into said bore. ]

[ 8. The medical valve of claim 7 wherein said septum piston defines a longitudinal axis and wherein said compressing member compresses said septum piston transverse to said longitudinal axis. ]

[ 9. The medical valve of claim 4 wherein said region comprises said bore having a region having variance in maximum dimension transverse to said axis, said septum piston defining a longitudinal axis and a maximum dimension transverse to said axis of said septum and wherein said maximum dimension of said septum piston is greater than the transverse dimension of said bore along said region. ]

[ 10. The medical valve of claim 4 wherein said region comprises said distal portion having a reduced maximum transverse dimension relative to said proximal portion. ]

[ 11. A medical valve for the transfer of fluid from a fluid receptacle in fluid communication with a connection terminal having an open male end to a tubing system in fluid communication with a patient's blood vessel, the valve comprising:

- a. an outer region support housing defining a longitudinal axis;
- b. a lumen extending within said outer region support housing, said lumen having an inlet and an outlet;
- c. flexible elastomeric occluding member for occluding said inlet, said flexible elastomeric occluding member having an outer face for contact with a male end of a connection terminal and further having a perforation therethrough, said perforation having an upper end adjacent said outer face, at least a portion of said flexible elastomeric occluding member being displace-

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able along said outer region support housing from a first position wherein said upper end of said perforation is closed to a second position wherein said upper end of said perforation is open;

- d. at least one portion of said outer region support housing being sized and configured to narrow said lumen, said at least one portion functioning to compress said flexible elastomeric occluding member, displacement of said flexible elastomeric occluding member inducing compression of said perforation to open said perforation and to provide fluid communication between an open male end of a connection terminal and said outlet. ]

[ 12. The medical valve of claim 11 wherein said flexible elastomeric occluding member has an elongated portion that is elongated in one dimension transverse to said longitudinal axis. ]

[ 13. The medical valve of claim 11 wherein said perforation is a slit. ]

[ 14. The medical valve of claim 11 wherein said outer region support housing includes at least one biasing portion projection from said outer region support housing, said flexible elastomeric occluding member engaging said biasing portion upon displacement of said flexible elastomeric occluding member into said second position to bias said flexible elastomeric occluding member and to thereby open said perforation. ]

[ 15. A medical valve for selectively providing the communication between a primary fluid system and a secondary fluid system, the valve comprising:

- a. a tubular housing defining a longitudinal axis and having a proximal end and a distal end and a bore extending from said proximal end to said distal end, the bore defining a longitudinal axis and having a proximal portion and a distal portion, the distal portion including at least one region having a narrower transverse width than said proximal portion,
- b. an elastomeric septum piston defining a longitudinal axis and disposed within said bore, said septum piston having a perforation extending along the longitudinal axis of said septum piston, said perforation being

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closed when said septum piston is free from external compressive force, at least a portion of said septum piston being displaceable along the longitudinal axis of said bore from a first proximal position wherein said perforation is closed, to a second distal position wherein said perforation is open, said septum piston in said distal position being compressed by said region to open said perforation through said septum piston, and thereby to provide fluid communication between the primary and secondary fluid systems through said septum piston. ]

[ 16. The medical valve of claim 15 wherein said perforation is a slit. ]

[ 17. The medical valve of claim 16 wherein said slit defines a long, transverse axis and wherein said region is defined by at least one projecting member, said at least one projecting member projecting in alignment toward said long transverse axis of said slit so that when at least a portion of said septum piston is longitudinally displaced along said bore and is compressed by said at least one projecting member, said slit is shortened when so compressed so that said slit opens to provide a flow channel through said perforation. ]

[ 18. The medical valve of claim 15 wherein said septum piston is generally cylindrical. ]

[ 19. The medical valve of claim 15 wherein said tubular housing has a generally circular cross-section. ]

[ 20. A medical valve of claim 1 wherein when the septum piston is in said second distal position, said perforation is substantially free from penetrating structure. ]

[ 21. A medical valve of claim 4 wherein when the septum piston is in said distal position, said perforation is substantially free from penetrating structure. ]

[ 22. A medical valve of claim 11 wherein when the septum piston is in said second, position said perforation is substantially free from penetrating structure. ]

[ 23. A medical valve of claim 15 wherein when the septum piston is in said second distal position, said perforation is substantially free from penetrating structure. ]

Sub B1 24. A medical valve for receiving a male luer having an open distal end and for selectively providing fluid communication, said valve comprising:

a. a male luer having a distal end and an opening therethrough;

b. a housing, having a proximal end and a distal end and a bore, the bore defining a longitudinal axis extending through said housing from said proximal end to said distal end;

c. said housing including a proximal portion for receiving said male luer end and a distal portion;

d. an elastomeric septum piston disposed within said bore, the septum piston being moveable distally along the longitudinal axis of said housing from a proximal position adjacent said proximal portion to a distal position adjacent said distal portion to open a space adjacent said piston, said fluid entering said space upon said distal movement,

e. said piston being further movable proximally from said distal position to said proximal position to close said space, said piston and said housing being sized and configured such that said space closes upon movement proximally such that said fluid within said space is expressed relative said piston, in a direction opposite the movement of said piston.

25. The medical valve of claim 24 wherein said space extends along said longitudinal axis adjacent said piston when said piston is in said distal position.

26. The medical valve of claim 24 wherein said space is compressed by said piston to express said fluid when said piston moves from said distal position to said proximal position.

27. The medical valve of claim 24 wherein said space is bounded by an interior surface of said piston when said piston is in said distal position.

28. The medical valve of claim 24 wherein said space defines, in said distal position, an upper portion and a lower portion, said housing and said piston being configured such that said upper portion is sealed when said piston moves from said distal position to said proximal position so said fluid is selectively expressed out said distal portion toward said distal end of said housing.

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